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TECHNICAL REPORT

STATISTICAL MODEL APPLIED TO THE REGION  
OF THE  $v_3$  FUNDAMENTAL OF  $CO_2$  AT  $1200^\circ K$

U.P. OPPENHEIM

TECHNION - ISRAEL INSTITUTE OF  
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Abstract

A new method is developed in order to correlate the observed emissivity of a statistical band with the experimental parameters of the gas (pressure, optical path, etc.). Use is made of curves of growth for every frequency in the band and the method is applied to the region of the  $4.3\mu$  bands of  $\text{CO}_2$  at a temperature of  $1200^\circ \text{K}$ . Experimental results for  $\text{CO}_2$  are described, which were obtained by heating the gas in cells of different length in an electrical furnace. Good quantitative agreement is found with experimental results of other workers. It is shown that the statistical model predicts the emissivity correctly over wide ranges of pressure and optical path.

Report

The work done under the Grant was reported in a paper which was published in the Journal of the Optical Society of America, Number 3, pp. 344 - 350 (1963), under the title:

"Statistical model applied to the region of the  $\nu_3$  fundamental of  $\text{CO}_2$  at  $1200^\circ \text{K}$ ", by U.P. Oppenheim and Y. Ben-Aryeh.

No other publications resulted from the present work.

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